Express Mail Label No: EV305327966US
Attorney Docket No: 748-01-PA
Filed August 5, 2003

SELF-INFLATING CHANGING PAD

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit, under 35 U.S.C. Section 119(e), of co-pending provisional application no. 60/402,320; filed August 8, 2002, the disclosure of which is incorporated herein by reference.

FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable

BACKGROUND OF THE INVENTION

[0002] This invention relates to a self-inflating changing pad for infants that has the benefit of portability. In particular, it relates to an inflatable pad on which an infant can be placed while he or she is being attended to, for example, while the baby's diapers are being changed.

[0003] Travel with infants is challenging, particularly infants who must wear diapers. Provision must be made to change their diapers whenever the need arises, which can be very inconvenient. To accommodate such needs, restrooms in hotels, restaurants, airports, and even airplanes are increasingly being fitted with changing tables. Nevertheless, such changing tables typically offer a hard, uncomfortable surface, with uncertain sanitary conditions. Moreover, there can be no certainty of finding a suitable changing table when the need arises for changing a diaper. Typically, therefore, a baby's diapers must be changed while the baby is lying on a hard floor or counter-top, at best with a blanket underneath.

[0004] Accordingly, it would be advantageous to provide a device on which an infant can be placed for diaper changing (or for other care) that is easily portable, and that provides the

baby with a soft, comfortable surface.

SUMMARY OF THE INVENTION

[0005] Broadly, the present invention is a self-inflating, collapsible changing pad, comprising an open-cell foam cushion unit; a retaining cover enclosing the cushion unit; and a self-inflation valve situated in the cover and communicating between the exterior of the cover and the interior of the cover, and selectively operable to allow the inflation and deflation of the cushion unit, whereby, when the valve is open and the cushion unit is collapsed, the cushion unit is expanded by the flow of air into the valve in response to the pressure differential between the interior and the exterior of the cover.

[0006] More specifically, in a preferred embodiment, the cushion unit includes a substantially rectangular base element having two opposed sides. An open-cell foam side bolster, integral with the base element, extends along each of the opposed sides of the base element, and a flexible, airtight retaining cover encloses the base element and the side bolsters.

[0007] In use, to collapse the changing pad from its inflated state to its deflated or collapsed state, the valve is opened. This allows air to escape from the open -celled foam material of the base element and the side bolsters through the valve as the changing pad is squeezed and rolled into a more or less cylindrical configuration. The valve is then closed to maintain the changing pad in this collapsed, deflated state. To restore the changing pad to its inflated state by self-inflation, the valve is opened, whereby the elastic expansion of the foam material creates a pressure differential with respect to the atmospheric pressure, causing air under atmospheric

pressure to flow into the foam material, until the base element and side bolsters are fully expanded.

[0008] As will be more fully appreciated from the detailed description below, the present invention provides a fully and conveniently portable changing pad that includes a soft, comfortable pad surface contained within an easily cleanable cover. These and other advantages will be readily understood from the following detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Figure 1 is a perspective view of the self-inflating changing pad in accordance with the present invention, showing the pad in its collapsed or deflated state and encased in a carrying sack;

[0010] Figure 2 is a perspective view of the changing pad of Figure 1, showing the pad in its collapsed or deflated state and removed from its carrying sack;

[0011] Figure 3 is a bottom perspective view of the self-inflating changing pad of the present invention, showing the pad in its inflated state;

[0012] Figure 4 is a top perspective view of the self-inflating changing pad of the present invention, showing the pad in its inflated state;

[0013] Figure 5 is a cross-sectional view taken along line 5 - 5 of Fig. 4;

[0014] Figure 6 is a detailed cross-sectional view showing the inflation/deflation

valve of the present invention in its closed position; and

[0015] Figure 7 is a detailed cross-sectional view showing the inflation/deflation valve of the present invention in its open position.

DETAILED DESCRIPTION OF THE INVENTION

[0016] Referring first to Figures 3, 4, and 5, a self-inflating changing pad 10 in accordance with the present invention includes cushion unit comprising a base element 12 and at least one upwardly-extending perimeter rail or bolster 14. In the preferred embodiment, the base element 12 is substantially rectangular, and an upwardly-extending side rail or bolster 14 extends along the entire length of each of the longer sides of the base element 12 . As best shown in Fig. 5, the base element 12 and the bolsters 14 are formed as an integral structure made of an open-celled foam material. The cushion unit comprising the base element 12 and the bolsters 14 is enclosed in an airtight retaining cover 16 that is made of a soft, flexible, water-resistant material, preferably nylon, although any suitable polymeric sheet material may be used. The cover 16 protects the cushion unit and retains the base element 12 and the bolsters 14 in their proper spacial relationship to form the configuration of the pad 10 shown in the drawings. Suitable materials for the cushion unit are well-known in the art. It will be appreciated that, while a rectangular configuration for the changing pad 10 is preferred, the base element 12 can be made in any other acceptable shape (e.g., elliptical), with the configuration of the bolsters 14 being appropriately modified. Alternatively, the base element may be circular, with a single circumferential perimeter bolster.

[0017] As shown in Figures 3 and 5, a sheet 18 of non-skid material is attached to

the bottom surface of the cover 16. The sheet 18 may be of any suitable fabric, such as felt, or it may be of a suitably textured plastic. As shown in Figures 3 and 4, first and second straps 20a, 20b with mating fasteners 22a, 22b, respectively, may advantageously be attached to opposite sides of the bottom surface of the cover 16. Each of the straps 20, 20b has a first end and a second end. The first end is attached to the bottom surface of the cover 16, with the fasteners 22a, 22b being attached to the second (free) end. The straps 20a, 20b are long enough to extend over the top of the pad 10, so that they may be used to secure an infant (not shown) gently but firmly onto the pad 10. The straps 20a, 20b may advantageously be length-adjustable.

[0018] An inflation/deflation valve 24 is installed in the cover 16, preferably adjacent one of the bolsters 14, as shown in Figures 4 and 5. As best shown in Figures 6 and 7, the valve 24 is a commercially-available type that comprises a tubular body 26 that extends from an inner end inside the cover 16 to an outer portion extending beyond the surface of the cover 16. The valve body 26 defines a valve passage 28 having an outer opening, and the outer portion of the valve body is externally threaded. An internally-threaded valve cover 30 is threaded onto the outer portion of the valve body 26 over the exterior end of the valve body 26, over the outer opening of the valve passage 28. The valve cover 30 is provided with a plurality of slits or vents 32 that are radially aligned with the outer end of the valve body 26. As shown in Figure 6, the valve cover 30 may be screwed inwardly (i.e., toward the bolster 14) on the valve body 26 to a closed position in which the vents 32 are closed against the outer end of the valve body 26, thereby closing the valve passage 28 to the atmosphere. As shown in Figure 7, the valve cover 30 may be screwed outwardly (i.e., away from the side bolster 14) on the valve body 26 to an

open position in which the vents 32 of the valve cover 30 are spaced away from the end of the valve body, thereby opening the valve passage 28 to the atmosphere through the vents 32.

[0019] A particular advantage of the valve 24 described above is that by simply twisting or rotating the valve cover 30, the valve 24 is opened, and the pad 10 automatically self-inflates due to the pressure differential between the interior and the exterior (ambient atmosphere), as described below. While the particular type of valve 24 described above is preferred, it is merely exemplary, and a variety of other types of valves that are functionally equivalent may be employed.

[0020] As shown in Figure 2, the changing pad 10 has a collapsed or deflated state in which it is capable of being rolled into the approximate form of a cylinder. In this collapsed state, the volume of the pad 10 is substantially reduced, so that it can be easily transported and stored. For example, once collapsed or deflated, the pad 10 can be placed in a protective carrying sack 34 that may optionally be provided with a pull cord 36 to close the sack 34.

[0021] The use of the inflation/deflation valve 24 to inflate and deflate the changing pad 10 is as follows: To collapse the changing pad 10 from its inflated or expanded configuration (Figs. 3-5) to its deflated or collapsed configuration (Fig. 2), the valve 24 is opened, as described above. This allows an outflow of air to escape from the open -celled foam material of the cushion unit through the valve 24 as the changing pad 10 is squeezed and rolled into the more or less cylindrical configuration shown in Figure 2. The valve 24 is then closed to maintain the changing pad in this collapsed, deflated state. To restore the changing pad 10 to its inflated or expanded

configuration by self-inflation, the valve 24 is opened, whereby the elastic expansion of the foam material creates a pressure differential with respect to the atmospheric pressure, causing air under atmospheric pressure to flow into the foam material, until the base element 12 and bolsters 14 are fully expanded.

[0022] While an exemplary embodiment of the invention has been described above, it will be appreciated that a number of modifications and variations may suggest themselves to those skilled in the pertinent arts. Such variations and modifications may be considered be within the scope of the invention, as determined by a fair reading of the claims that follow.